

=> s E4;D

L2 1 "SIALIC ACID PHOSPHATE SYNTHASE (DROSOPHILA MELANOGASTER STRAIN OREGON-R)"/CN

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS

RN 433280-04-7 REGISTRY

CN Synthase, N-acetylneuraminate 9-phosphate (Drosophila melanogaster strain Oregon-R) (9CI) (CA INDEX NAME)

OTHER NAMES:

CN GenBank AF397531-derived protein GI 15213695

CN Neu5Ac synthase (Drosophila melanogaster strain Oregon-R)

CN sialic acid phosphate synthase (Drosophila melanogaster strain Oregon-R)

CN sialic acid synthase (Drosophila melanogaster strain Oregon-R)

FS PROTEIN SEQUENCE

MF Unspecified

CI MAN

SR CA

LC STN Files: CA, CAPLUS

RELATED SEQUENCES AVAILABLE WITH SEQLINK

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1 REFERENCES IN FILE CA (1957 TO DATE)

1 REFERENCES IN FILE CAPLUS (1957 TO DATE)

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L3 1 "SIALIC ACID SYNTHASE"/CN

L3 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS

RN 37290-66-7 REGISTRY

CN Synthase, N-acetylneuraminate (9CI) (CA INDEX NAME)

OTHER NAMES:

CN E.C. 4.1.3.19

CN N-Acetylneuraminate synthase

CN N-Acetylneuraminate-condensing enzyme

CN Sialate synthase

CN Sialic acid synthase

MF Unspecified

CI MAN

LC STN Files: BIOSIS, BIOTECHNO, CA, CAPLUS, CASREACT, EMBASE, TOXCENTER, USPATFULL

*** STRUCTURE DI

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NEWS 30	Apr 11	Display formats in DGENE enhanced
NEWS 31	Apr 14	MEDLINE Reload
NEWS 32	Apr 17	Polymer searching in REGISTRY enhanced
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NEWS 36	May 05	Pharmacokinetic information and systematic chemical names added to PHAR
NEWS 37	May 15	MEDLINE file segment of TOXCENTER reloaded
NEWS 38	May 15	Supporter information for ENCOMPAT and ENCOMPLIT updated
NEWS 39	May 16	CHEMREACT will be removed from STN
NEWS 40	May 19	Simultaneous left and right truncation added to WSCA
NEWS 41	May 19	RAPRA enhanced with new search field, simultaneous left and right truncation
NEWS 42	Jun 06	Simultaneous left and right truncation added to CBNB

NEWS 43 Jun 06 PASCAL enhanced with additional data
NEWS 44 Jun 20 2003 edition of the FSTA Thesaurus is now available
NEWS 45 Jun 25 HSDB has been reloaded

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MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003
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in the CAS Registry File, for complete details:
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> e N-acetylmannosamine kinase/CN

E1	1	N-ACETYLMANNOSAMINE 6-P EPIMERASE (STREPTOCOCCUS SUIS STRAIN DAT2 GENE NANE)/CN
E2	1	N-ACETYLMANNOSAMINE 6-PHOSPHATE/CN
E3	1	--> N-ACETYLMANNOSAMINE KINASE/CN
E4	1	N-ACETYLMANNOSAMINE KINASE (ESCHERICHIA COLI STRAIN O157:H7 GENE ECS4095)/CN
E5	1	N-ACETYLMANNOSAMINE KINASE (FUSOBACTERIUM NUCLEATUM NUCLEATU M STRAIN ATCC25586 GENE FN1474)/CN
E6	1	N-ACETYLMANNOSAMINE SYNTHETASE (CAMPYLOBACTER JEJUNI STRAIN

MSC-57360 GENE NEUC1)/CN
E7 1 N-ACETYLMANNOSAMINE TETRAACETATE/CN
E8 1 N-ACETYLMANNOSAMINE TO A-ACETYLGLUCOSAMINE EPIMERASE (ESCHER
ICHIA COLI STRAIN O157:H7 GENE ECS4096)/CN
E9 1 N-ACETYLMANNOSAMINE-2-EPIMERASE/CN
E10 1 N-ACETYLMANNOSAMINE-6-P (STREPTOCOCCUS PYOGENES STRAIN MGAS3
15 GENE SPYM3-0179)/CN
E11 1 N-ACETYLMANNOSAMINE-6-P (STREPTOCOCCUS PYOGENES STRAIN MGAS
8232 GENE SPYM18-0233)/CN
E12 1 N-ACETYLMANNOSAMINE-6-P EPIMERASE (MYCOPLASMA PULMONIS STRAI
N UAB CTIP GENE MYPYU-3630)/CN

=> s E3;D

L1 1 "N-ACETYLMANNOSAMINE KINASE"/CN

L1 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS
RN 9027-53-6 REGISTRY
CN Kinase (phosphorylating), acylmannosamine (9CI) (CA INDEX NAME)
OTHER NAMES:
CN Acetylaminodeoxymannokinase
CN Acetylmannosamine kinase
CN Acylaminodeoxymannokinase
CN Acylmannosamine kinase
CN E.C. 2.7.1.60
CN N-Acetylmannosamine 6-kinase
CN **N-Acetylmannosamine kinase**
CN N-Acyl-D-mannosamine kinase
DR 9027-62-7
MF Unspecified
CI MAN
LC STN Files: BIOSIS, CA, CAPLUS, TOXCENTER

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
38 REFERENCES IN FILE CA (1957 TO DATE)
38 REFERENCES IN FILE CAPLUS (1957 TO DATE)

=> e sialic acid phosphate synthase/CN

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E2 1 SIALIC ACID PERMEASE (ESCHERICHIA COLI CLONE PSX600 GENE NAN
T)/CN
E3 0 --> SIALIC ACID PHOSPHATE SYNTHASE/CN
E4 1 SIALIC ACID PHOSPHATE SYNTHASE (DROSOPHILA MELANOGASTER STRA
IN OREGON-R)/CN
E5 1 SIALIC ACID SYNTHASE/CN
E6 1 SIALIC ACID SYNTHASE (CAMPYLOBACTER JEJUNI STRAIN MSC-57360
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E7 1 SIALIC ACID SYNTHASE (CAMPYLOBACTER JEJUNI STRAIN OH4384)/CN
E8 1 SIALIC ACID SYNTHASE (CHLOROBIVUM TEPIDUM STRAIN TLS GENE CT0
825)/CN
E9 1 SIALIC ACID SYNTHASE (CLOSTRIDIUM ACETOBUTYLICUM STRAIN ATCC
824 GENE CAC2187)/CN
E10 1 SIALIC ACID SYNTHASE (DROSOPHILA MELANOGASTER STRAIN OREGON-
R)/CN
E11 1 SIALIC ACID SYNTHASE (HELICOBACTER PYLORI STRAIN J99 GENE NE
UB)/CN
E12 1 SIALIC ACID SYNTHASE (HELICOBACTER PYLORI STRAIN NQ1624 GENE
NEUB)/CN

=> s E4;D

L2 1 "SIALIC ACID PHOSPHATE SYNTHASE (DROSOPHILA MELANOGASTER STRAIN
OREGON-R)"/CN

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS
RN 433280-04-7 REGISTRY
CN Synthase, N-acetylneuraminate 9-phosphate (Drosophila melanogaster strain Oregon-R) (9CI) (CA INDEX NAME)

OTHER NAMES:

CN GenBank AF397531-derived protein GI 15213695
CN Neu5Ac synthase (Drosophila melanogaster strain Oregon-R)
CN sialic acid phosphate synthase (Drosophila melanogaster strain Oregon-R)
CN sialic acid synthase (Drosophila melanogaster strain Oregon-R)
FS PROTEIN SEQUENCE
MF Unspecified
CI MAN
SR CA
LC STN Files: CA, CAPLUS

RELATED SEQUENCES AVAILABLE WITH SEQLINK

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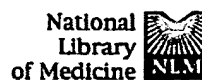
=> s E5;D

L3 1 "SIALIC ACID SYNTHASE"/CN

L3 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS
RN 37290-66-7 REGISTRY
CN Synthase, N-acetylneuraminate (9CI) (CA INDEX NAME)
OTHER NAMES:

CN E.C. 4.1.3.19
CN N-Acetylneuraminate synthase
CN N-Acetylneuraminate-condensing enzyme
CN Sialate synthase
CN Sialic acid synthase
MF Unspecified
CI MAN
LC STN Files: BIOSIS, BIOTECHNO, CA, CAPLUS, CASREACT, EMBASE, TOXCENTER, USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
38 REFERENCES IN FILE CA (1957 TO DATE)
38 REFERENCES IN FILE CAPLUS (1957 TO DATE)



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☐ 1: J Biol Chem. 2000 Jun 9;275(23):17869-77.

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Cloning and expression of the human N-acetylneuraminic acid phosphate synthase gene with 2-keto-3-deoxy-D-glycero-D-galacto-nononic acid biosynthetic ability.

PubMed
Services

Lawrence SM, Huddleston KA, Pitts LR, Nguyen N, Lee YC, Vann WF, Coleman TA, Betenbaugh MJ.

Departments of Chemical Engineering and Biology, The Johns Hopkins University, Baltimore, Maryland 21218, USA.

Related
Resources

Sialic acids participate in many important biological recognition events, yet eukaryotic sialic acid biosynthetic genes are not well characterized. In this study, we have identified a novel human gene based on homology to the Escherichia coli sialic acid synthase gene (neuB). The human gene is ubiquitously expressed and encodes a 40-kDa enzyme. The gene partially restores sialic acid synthase activity in a neuB-negative mutant of E. coli and results in N-acetylneuraminic acid (Neu5Ac) and 2-keto-3-deoxy-D-glycero-D-galacto-nononic acid (KDN) production in insect cells upon recombinant baculovirus infection. In vitro the human enzyme uses N-acetylmannosamine 6-phosphate and mannose 6-phosphate as substrates to generate phosphorylated forms of Neu5Ac and KDN, respectively, but exhibits much higher activity toward the Neu5Ac phosphate product.

PMID: 10749855 [PubMed - indexed for MEDLINE]

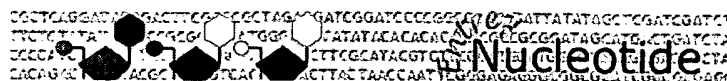
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1: AF397531. Drosophila melano...[gi:15213694]

[Links](#)

LOCUS AF397531 1194 bp mRNA linear INV 20-MAR-2002
 DEFINITION Drosophila melanogaster Neu5Ac synthase mRNA, complete cds.
 ACCESSION AF397531
 VERSION AF397531.1 GI:15213694
 KEYWORDS
 SOURCE Drosophila melanogaster (fruit fly)
 ORGANISM Drosophila melanogaster
 Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
 Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;
 Ephydroidea; Drosophilidae; Drosophila.
 REFERENCE 1 (bases 1 to 1194)
 AUTHORS Kim,K., Lawrence,S.M., Park,J., Pitts,L., Vann,W.F.,
 Betenbaugh,M.J. and Palter,K.B.
 TITLE Expression of a functional Drosophila melanogaster
 N-acetylneuraminic acid (Neu5Ac) phosphate synthase gene: evidence
 for endogenous sialic acid biosynthetic ability in insects
 JOURNAL Glycobiology 12 (2), 73-83 (2002)
 MEDLINE 21883822
 PUBMED 11886840
 REFERENCE 2 (bases 1 to 1194)
 AUTHORS Kim,K., Lawrence,S.M., Park,J., Pitts,L., Vann,W.F.,
 Betenbaugh,M.J. and Palter,K.B.
 TITLE Direct Submission
 JOURNAL Submitted (09-JUL-2001) Department of Biology, Temple University,
 1900 N. 12th St., Philadelphia, PA 19122, USA
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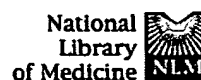
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☐ 1: J Biol Chem. 1997 Sep 26;272(39):24319-24.

Related Articles, Links

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PubMed

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A bifunctional enzyme catalyzes the first two steps in N-acetylneuraminic acid biosynthesis of rat liver. Molecular cloning and functional expression of UDP-N-acetyl-glucosamine 2-epimerase/N-acetylmannosamine kinase.

PubMed
Services

Stasche R, Hinderlich S, Weise C, Effertz K, Lucka L, Moormann P, Reutter W.

Institut für Molekularbiologie und Biochemie, Freie Universität Berlin, Arnimallee 22, D-14195 Berlin-Dahlem, Germany.

Related
Resources

N-Acetylneuraminic acid (Neu5Ac) is the precursor of sialic acids, a group of important molecules in biological recognition systems. Biosynthesis of Neu5Ac is initiated and regulated by its key enzyme, UDP-N-acetylglucosamine 2-epimerase (UDP-GlcNAc 2-epimerase, EC 5.1. 3.14)/N-acetylmannosamine kinase (ManNAc kinase, EC 2.7.1.60) in rat liver (Hinderlich, S., Stasche, R., Zeitler, R., and Reutter, W. (1997) J. Biol. Chem. 272, 24313-24318). In the present paper we report the isolation and characterization of a cDNA clone encoding this bifunctional enzyme. An open reading frame of 2166 base pairs encodes 722 amino acids with a predicted molecular mass of 79 kDa. The deduced amino acid sequence contains exact matches of the sequences of five peptides derived from tryptic cleavage of the enzyme. The recombinant bifunctional enzyme was expressed in COS7 cells, where it displayed both epimerase and kinase activity. Distribution of UDP-GlcNAc 2-epimerase/ManNAc kinase in the cytosol of several rat tissues was investigated by determining both specific enzyme activities. Secreting organs (liver, salivary glands, and intestinal mucosa) showed high specific activities of UDP-GlcNAc 2-epimerase/ManNAc kinase, whereas significant levels of these activities were absent from other organs (lung, kidney, spleen, brain, heart, skeletal muscle, and testis). Northern blot analysis revealed no UDP-GlcNAc 2-epimerase/ManNAc kinase mRNA in the non-secreting tissues.

PMID: 9305888 [PubMed - indexed for MEDLINE]

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L4

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result set

DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ

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WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 7 of 7 returned.**☐ 1. Document ID: US 6168934 B1

L4: Entry 1 of 7

File: USPT

Jan 2, 2001

US-PAT-NO: 6168934

DOCUMENT-IDENTIFIER: US 6168934 B1

TITLE: Oligosaccharide enzyme substrates and inhibitors: methods and compositions

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 2. Document ID: US 5759823 A

L4: Entry 2 of 7

File: USPT

Jun 2, 1998

US-PAT-NO: 5759823

DOCUMENT-IDENTIFIER: US 5759823 A

TITLE: Oligosaccharide enzyme substrates and inhibitors: methods and compositions

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 3. Document ID: US 5593887 A

L4: Entry 3 of 7

File: USPT

Jan 14, 1997

US-PAT-NO: 5593887

DOCUMENT-IDENTIFIER: US 5593887 A

TITLE: Oligosaccharide enzyme substrates and inhibitors: methods and compositions

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 4. Document ID: US 5461143 A

L4: Entry 4 of 7

File: USPT

Oct 24, 1995

US-PAT-NO: 5461143

DOCUMENT-IDENTIFIER: US 5461143 A

TITLE: Oligosaccharide enzyme substrates and inhibitors: methods and compositions

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☐ 5. Document ID: US 5278299 A

L4: Entry 5 of 7

File: USPT

Jan 11, 1994

US-PAT-NO: 5278299

DOCUMENT-IDENTIFIER: US 5278299 A

TITLE: Method and composition for synthesizing sialylated glycosyl compounds

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 6. Document ID: WO 9216640 A1

L4: Entry 6 of 7

File: EPAB

Oct 1, 1992

PUB-NO: WO009216640A1

DOCUMENT-IDENTIFIER: WO 9216640 A1

TITLE: OLIGOSACCHARIDE ENZYME SUBSTRATES AND INHIBITORS: METHODS AND COMPOSITIONS

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 7. Document ID: US 5593887 A

L4: Entry 7 of 7

File: DWPI

Jan 14, 1997

DERWENT-ACC-NO: 1997-099475

DERWENT-WEEK: 200113

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TITLE: Phagemids CMPSIL-1 and CMPSIL-W10 - for over-expression of CMP-NeuAc synthetase (CMP sialic acid synthetase) in E. coli

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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[Generate Collection](#)[Print](#)

Terms	Documents
CMPSIL-1 or CMPSIL-W10	7

Display Format:

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WEST[Help](#)[Logout](#)[Interrupt](#)[Main Menu](#)[Search Form](#)[Posting Counts](#)[Show S Numbers](#)[Edit S Numbers](#)[Preferences](#)[Cases](#)**Search Results -**

Terms	Documents
L2 same (insect cell or Spodoptera or Tricoplusia or Estigmena or Drosophila)	0

Database:

US Patents Full-Text Database	▲
US Pre-Grant Publication Full-Text Database	
JPO Abstracts Database	
EPO Abstracts Database	
Derwent World Patents Index	
IBM Technical Disclosure Bulletins	▼

Search:

L3	▲
	▼

[Refine Search](#)[Recall Text](#)[Clear](#)**Search History**

DATE: Wednesday, October 23, 2002 [Printable Copy](#) [Create Case](#)

Set Name Query
side by side

Hit Count Set Name
result set

DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ

<u>L3</u>	L2 same (insect cell or Spodoptera or Tricoplusia or Estigmena or Drosophila)
<u>L2</u>	L1 with (synthes\$\$\$\$ or biosynthe\$\$\$\$)
<u>L1</u>	(CMP-sialic acid or CMP-NANA or CMP-KDN)

0	<u>L3</u>
42	<u>L2</u>
149	<u>L1</u>

END OF SEARCH HISTORY

WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 42 of 42 returned.**☐ 1. Document ID: US 20020148791 A1

L2: Entry 1 of 42

File: PGPB

Oct 17, 2002

PGPUB-DOCUMENT-NUMBER: 20020148791
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020148791 A1

TITLE: Carbohydrate purification using ultrafiltration, reverse osmosis and nanofiltration

PUBLICATION-DATE: October 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	

US-CL-CURRENT: [210/767](#); [536/53](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw Desc	Image
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☐ 2. Document ID: US 20020142386 A1

L2: Entry 2 of 42

File: PGPB

Oct 3, 2002

PGPUB-DOCUMENT-NUMBER: 20020142386
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020142386 A1

TITLE: Engineering intracellular sialylation pathways

PUBLICATION-DATE: October 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Betenbaugh, Michael J.	Baltimore	MD	US	
Lawrence, Shawn	Dobbs Ferry	NY	US	
Lee, Yuan C.	Timonium	MD	US	
Coleman, Timothy A.	Gaithersburg	MD	US	

US-CL-CURRENT: [435/69.1](#); [435/325](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw Desc	Image
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☐ 3. Document ID: US 20020142370 A1

L2: Entry 3 of 42

File: PGPB

Oct 3, 2002

PGPUB-DOCUMENT-NUMBER: 20020142370

PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020142370 A1

TITLE: Practical in vitro sialylation of recombinant glycoproteins

PUBLICATION-DATE: October 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Paulson, James C.	Del Mar	CA	US	
Bayer, Robert J.	San Diego	CA	US	
Sjoberg, Eric	San Diego	CA	US	

US-CL-CURRENT: 435/68.1; 435/200, 536/53

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 4. Document ID: US 20020127682 A1

L2: Entry 4 of 42

File: PGPB

Sep 12, 2002

PGPUB-DOCUMENT-NUMBER: 20020127682
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020127682 A1

TITLE: Glycosyltransferases for biosynthesis of oligosaccharides, and genes encoding them

PUBLICATION-DATE: September 12, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Gotschlich, Emil C.	New York	NY	US	

US-CL-CURRENT: 435/193; 435/320.1, 435/325, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 5. Document ID: US 20020119516 A1

L2: Entry 5 of 42

File: PGPB

Aug 29, 2002

PGPUB-DOCUMENT-NUMBER: 20020119516
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020119516 A1

TITLE: Practical in vitro sialylation of recombinant glycoproteins

PUBLICATION-DATE: August 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Paulson, James C.	Del Mar	CA	US	
Bayer, Robert J.	San Diego	CA	US	
Sjoberg, Eric	San Diego	CA	US	

US-CL-CURRENT: 435/68.1; 435/193

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 6. Document ID: US 20020042369 A1

L2: Entry 6 of 42

File: PGPB

Apr 11, 2002

PGPUB-DOCUMENT-NUMBER: 20020042369

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020042369 A1

TITLE: Campylobacter glycosyltransferases for biosynthesis of gangliosides and ganglioside mimics

PUBLICATION-DATE: April 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Gilbert, Michel	Hull		CA	
Wakarchuk, Warren W.	Gloucester		CA	

US-CL-CURRENT: 514/12, 435/193, 435/320.1, 435/325, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 7. Document ID: US 20020001831 A1

L2: Entry 7 of 42

File: PGPB

Jan 3, 2002

PGPUB-DOCUMENT-NUMBER: 20020001831

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020001831 A1

TITLE: Low cost manufacture of oligosaccharides

PUBLICATION-DATE: January 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Defrees, Shawn	North Wales	PA	US	
Johnson, Karl	Willow Grove	PA	US	

US-CL-CURRENT: 435/101, 435/84, 536/53

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 8. Document ID: US 6465612 B1

L2: Entry 8 of 42

File: USPT

Oct 15, 2002

US-PAT-NO: 6465612

DOCUMENT-IDENTIFIER: US 6465612 B1

TITLE: Synthetic peptides, conjugation reagents and methods

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 9. Document ID: US 6454946 B1

L2: Entry 9 of 42

File: USPT

Sep 24, 2002

US-PAT-NO: 6454946

DOCUMENT-IDENTIFIER: US 6454946 B1

TITLE: Carbohydrate purification using ultrafiltration, reverse osmosis and nanofiltration

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 10. Document ID: US 6440703 B1

L2: Entry 10 of 42

File: USPT

Aug 27, 2002

US-PAT-NO: 6440703

DOCUMENT-IDENTIFIER: US 6440703 B1

TITLE: Enzymatic synthesis of gangliosides

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 11. Document ID: US 6403306 B1

L2: Entry 11 of 42

File: USPT

Jun 11, 2002

US-PAT-NO: 6403306

DOCUMENT-IDENTIFIER: US 6403306 B1

TITLE: Serogroup-specific nucleotide sequences in the molecular typing of bacterial isolates and the preparation of vaccines thereto

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 12. Document ID: US 6399336 B1

L2: Entry 12 of 42

File: USPT

Jun 4, 2002

US-PAT-NO: 6399336

DOCUMENT-IDENTIFIER: US 6399336 B1

TITLE: Practical in vitro sialylation of recombinant glycoproteins

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 13. Document ID: US 6395717 B1

L2: Entry 13 of 42

File: USPT

May 28, 2002

US-PAT-NO: 6395717

DOCUMENT-IDENTIFIER: US 6395717 B1

TITLE: Therapeutic drug for endotoxin blood symptom and multi-organ failure induced thereby

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw Desc	Image
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☐ 14. Document ID: US 6342382 B1

L2: Entry 14 of 42

File: USPT

Jan 29, 2002

US-PAT-NO: 6342382

DOCUMENT-IDENTIFIER: US 6342382 B1

TITLE: Glycosyltransferases for biosynthesis of oligosaccharides, and genes encoding them

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw Desc	Image
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☐ 15. Document ID: US 6191271 B1

L2: Entry 15 of 42

File: USPT

Feb 20, 2001

US-PAT-NO: 6191271

DOCUMENT-IDENTIFIER: US 6191271 B1

TITLE: Synthetic divalent sLex containing polylactosamines and methods for use

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw Desc	Image
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☐ 16. Document ID: US 6168934 B1

L2: Entry 16 of 42

File: USPT

Jan 2, 2001

US-PAT-NO: 6168934

DOCUMENT-IDENTIFIER: US 6168934 B1

TITLE: Oligosaccharide enzyme substrates and inhibitors: methods and compositions

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw Desc	Image
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☐ 17. Document ID: US 6117651 A

L2: Entry 17 of 42

File: USPT

Sep 12, 2000

US-PAT-NO: 6117651

DOCUMENT-IDENTIFIER: US 6117651 A

TITLE: Expression vectors

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw Desc	Image
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☐ 18. Document ID: US 6083931 A

L2: Entry 18 of 42

File: USPT

Jul 4, 2000

US-PAT-NO: 6083931
DOCUMENT-IDENTIFIER: US 6083931 A

TITLE: Method of inhibiting cancer metastasis

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 19. Document ID: US 5965544 A

L2: Entry 19 of 42

File: USPT

Oct 12, 1999

US-PAT-NO: 5965544
DOCUMENT-IDENTIFIER: US 5965544 A

TITLE: Synthetic multivalent sLe.sup.x containing polylactosamines and methods for use

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 20. Document ID: US 5945322 A

L2: Entry 20 of 42

File: USPT

Aug 31, 1999

US-PAT-NO: 5945322
DOCUMENT-IDENTIFIER: US 5945322 A

TITLE: Glycosyltransferases for biosynthesis of oligosaccharides, and genes encoding them

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 21. Document ID: US 5880100 A

L2: Entry 21 of 42

File: USPT

Mar 9, 1999

US-PAT-NO: 5880100
DOCUMENT-IDENTIFIER: US 5880100 A

TITLE: Method for inhibiting binding of human lens cells

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 22. Document ID: US 5811539 A

L2: Entry 22 of 42

File: USPT

Sep 22, 1998

US-PAT-NO: 5811539
DOCUMENT-IDENTIFIER: US 5811539 A

TITLE: Process for isolating and purifying nucleotide-activated sugars from biological sources

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 23. Document ID: US 5798233 A

L2: Entry 23 of 42

File: USPT

Aug 25, 1998

US-PAT-NO: 5798233

DOCUMENT-IDENTIFIER: US 5798233 A

TITLE: Glycosyltransferases for biosynthesis of oligosaccharides, and genes encoding them

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 24. Document ID: US 5770407 A

L2: Entry 24 of 42

File: USPT

Jun 23, 1998

US-PAT-NO: 5770407

DOCUMENT-IDENTIFIER: US 5770407 A

TITLE: Process for preparing nucleotide inhibitors of glycosyltransferases

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 25. Document ID: US 5759823 A

L2: Entry 25 of 42

File: USPT

Jun 2, 1998

US-PAT-NO: 5759823

DOCUMENT-IDENTIFIER: US 5759823 A

TITLE: Oligosaccharide enzyme substrates and inhibitors: methods and compositions

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 26. Document ID: US 5705367 A

L2: Entry 26 of 42

File: USPT

Jan 6, 1998

US-PAT-NO: 5705367

DOCUMENT-IDENTIFIER: US 5705367 A

TITLE: Glycosyltransferases for biosynthesis of oligosaccharides, and genes encoding them

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 27. Document ID: US 5654412 A

L2: Entry 27 of 42

File: USPT

Aug 5, 1997

US-PAT-NO: 5654412

DOCUMENT-IDENTIFIER: US 5654412 A

TITLE: Processes for the synthesis of sialyl Lewis^x compounds

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 28. Document ID: US 5627271 A

L2: Entry 28 of 42

File: USPT

May 6, 1997

US-PAT-NO: 5627271

DOCUMENT-IDENTIFIER: US 5627271 A

TITLE: Glycolipids, their preparation and use

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 29. Document ID: US 5621086 A

L2: Entry 29 of 42

File: USPT

Apr 15, 1997

US-PAT-NO: 5621086

DOCUMENT-IDENTIFIER: US 5621086 A

TITLE: Sialic acid derivative and method of manufacturing it

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 30. Document ID: US 5593887 A

L2: Entry 30 of 42

File: USPT

Jan 14, 1997

US-PAT-NO: 5593887

DOCUMENT-IDENTIFIER: US 5593887 A

TITLE: Oligosaccharide enzyme substrates and inhibitors: methods and compositions

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 31. Document ID: US 5545553 A

L2: Entry 31 of 42

File: USPT

Aug 13, 1996

US-PAT-NO: 5545553

DOCUMENT-IDENTIFIER: US 5545553 A

TITLE: Glycosyltransferases for biosynthesis of oligosaccharides, and genes encoding them

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 32. Document ID: US 5461143 A

L2: Entry 32 of 42

File: USPT

Oct 24, 1995

US-PAT-NO: 5461143

DOCUMENT-IDENTIFIER: US 5461143 A

TITLE: Oligosaccharide enzyme substrates and inhibitors: methods and compositions

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 33. Document ID: US 5418129 A

L2: Entry 33 of 42

File: USPT

May 23, 1995

US-PAT-NO: 5418129

DOCUMENT-IDENTIFIER: US 5418129 A

TITLE: Blood treatment method

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 34. Document ID: US 5405753 A

L2: Entry 34 of 42

File: USPT

Apr 11, 1995

US-PAT-NO: 5405753

DOCUMENT-IDENTIFIER: US 5405753 A

TITLE: CMP-activated, fluorescing sialic acids, as well as processes for their preparation

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 35. Document ID: US 5374541 A

L2: Entry 35 of 42

File: USPT

Dec 20, 1994

US-PAT-NO: 5374541

DOCUMENT-IDENTIFIER: US 5374541 A

TITLE: Combined use of .beta.-galactosidase and sialyltransferase coupled with in situ regeneration of CMP-sialic acid for one pot synthesis of oligosaccharides

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 36. Document ID: US 5278299 A

L2: Entry 36 of 42

File: USPT

Jan 11, 1994

US-PAT-NO: 5278299

DOCUMENT-IDENTIFIER: US 5278299 A

TITLE: Method and composition for synthesizing sialylated glycosyl compounds

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 37. Document ID: US 5240833 A

L2: Entry 37 of 42

File: USPT

Aug 31, 1993

US-PAT-NO: 5240833

DOCUMENT-IDENTIFIER: US 5240833 A

TITLE: Method for the production of monoclonal antibodies directed to tumor-associated gangliosides and fucogangliosides

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 38. Document ID: US 5070079 A

L2: Entry 38 of 42

File: USPT

Dec 3, 1991

US-PAT-NO: 5070079

DOCUMENT-IDENTIFIER: US 5070079 A

TITLE: Pharmaceutical compositions containing cytidine monophosphate of 5-acetamido-3-, 5-D-deoxy-D-glycero-D-galacto-nonulosamic acid

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☒ 39. Document ID: US 4704361 A

L2: Entry 39 of 42

File: USPT

Nov 3, 1987

US-PAT-NO: 4704361

DOCUMENT-IDENTIFIER: US 4704361 A

TITLE: Pharmaceutical compositions containing the cytidine monophosphate of 5-acetamido-3,5-dideoxy-D-glycero-D-galactononulosaminic acid and a method for preparing said compound

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☒ 40. Document ID: JP 06141880 A

L2: Entry 40 of 42

File: JPAB

May 24, 1994

PUB-NO: JP406141880A

DOCUMENT-IDENTIFIER: JP 06141880 A

TITLE: METHOD FOR SYNTHESIZING CMP-KDN

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 41. Document ID: JP 07145191 A

L2: Entry 41 of 42

File: DWPI

Jun 6, 1995

DERWENT-ACC-NO: 1995-237194

DERWENT-WEEK: 199531

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TITLE: New pyrimidine nucleoside-substd. galactosyl:phosphonate derivs. - used as sugar chain biosynthesis inhibitors and antiinflammatory agents

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Clip Img	Image
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☐ 42. Document ID: CA 2110582 C WO 9222563 A1 EP 588848 A1 EP 589933 A1 EP 589951
A1 US 5352670 A JP 06509703 W JP 06510661 W JP 06510744 W JP 06510745 W JP 06510746
W JP 07502011 W EP 589933 B1 ES 2100346 T3 US 5872096 A US 5882901 A CA 2110797 C

L2: Entry 42 of 42

File: DWPI

Feb 27, 2001

DERWENT-ACC-NO: 1993-018068

DERWENT-WEEK: 200115

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TITLE: New silyl Lewis a derivs. - modulate cell-mediated immune responses including inflammatory responses

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	IMAC	Draw Desc	Clip Img	Image
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Terms	Documents
L1 with (synthes\$\$\$\$ or biosynthe\$\$\$\$)	42

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L2: Entry 40 of 42

File: JPAB

May 24, 1994

PUB-NO: JP406141880A
DOCUMENT-IDENTIFIER: JP 06141880 A
TITLE: METHOD FOR SYNTHESIZING CMP-KDN

PUBN-DATE: May 24, 1994

INVENTOR-INFORMATION:

NAME

COUNTRY

ITO, FUMIO

IWASAKI, TAISUKE

ASSIGNEE-INFORMATION:

NAME

COUNTRY

SNOW BRAND MILK PROD CO LTD

APPL-NO: JP04321161

APPL-DATE: November 5, 1992

US-CL-CURRENT: 435/89

INT-CL (IPC): C12P 19/30

ABSTRACT:

PURPOSE: To obtain cytidine 5'-monophosphate-2-keto-3-deoxy-D-glycero-D- galacto-nononic acid (CMP-KDN) in a sufficient yield by reacting cytidine 5'- triphosphate (CTP) with the KDN in the presence of an enzymic extract solution of a bovine submandibular gland or a porcine lever.

CONSTITUTION: CTP is made to react with KDN in the presence of an enzymic extract solution of a bovine submandibular gland or a porcine lever to synthesize CMP-KDN respectively at about 49.5% and 22.7% synthetic ratio. The enzymic extract solution of the bovine submandibular gland or porcine lever is a fraction with a 35-60% saturated ammonium sulfate of an aqueous extract supernatant of the bovine submandibular gland or porcine lever.

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May 24, 1994

PUB-NO: JP406141880A

DOCUMENT-IDENTIFIER: JP 06141880 A

TITLE: METHOD FOR SYNTHESIZING CMP-KDN

PUBN-DATE: May 24, 1994

INVENTOR-INFORMATION:

NAME

COUNTRY

ITO, FUMIO

IWASAKI, TAISUKE

US-CL-CURRENT: 435/89

INT-CL (IPC): C12P 19/30

ABSTRACT:

PURPOSE: To obtain cytidine 5'-monophosphate-2-keto-3-deoxy-D-glycero-D- galacto-nononic acid (CMP-KDN) in a sufficient yield by reacting cytidine 5'- triphosphate (CTP) with the KDN in the presence of an enzymic extract solution of a bovine submandibular gland or a porcine lever.

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L7 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 1
ACCESSION NUMBER: 2001:914804 CAPLUS
DOCUMENT NUMBER: 136:364440
TITLE: Cloning and expression of human sialic acid pathway genes to generate CMP-sialic acids in insect cells
AUTHOR(S): Lawrence, Shawn M.; Huddleston, Kathleen A.; Tomiya, Noboru; Nguyen, Nam; Lee, Yuan C.; Vann, Willie F.; Coleman, Timothy A.; Betenbaugh, Michael J.
CORPORATE SOURCE: Department of Chemical Engineering, The Johns Hopkins University, Baltimore, MD, 21218, USA
SOURCE: Glycoconjugate Journal (2001), 18(3), 205-213
CODEN: GLJOEW; ISSN: 0282-0080
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The addn. of sialic acid residues to glycoproteins can affect important protein properties including biol. activity and in vivo circulatory half-life. For sialylation to occur, the donor sugar nucleotide cytidine monophospho-sialic acid (CMP-SA) must be generated and enzymically transferred to an acceptor oligosaccharide. However, examn. of **insect cells** grown in serum-free medium revealed negligible native levels of the most common sialic acid nucleotide, **CMP-N-acetylneuraminic acid** (CMP-Neu5Ac). To increase substrate levels, the enzymes of the metabolic pathway for **CMP-SA** synthesis have been engineered into **insect cells** using the baculovirus expression system. In this study, a human CMP-sialic acid synthase cDNA was identified and found to encode a protein with 94% identity to the murine homolog. The human CMP-sialic acid synthase (Cmp-Sas) is ubiquitously expressed in human cells from multiple tissues. When expressed in insect cells using the baculovirus vector, the encoded protein is functional and localizes to the nucleus as in mammalian cells. In addn., co-expression of Cmp-Sas with the recently cloned sialic acid phosphate synthase with N-acetylmannosamine feeding yields intracellular CMP-Neu5Ac levels 30 times higher than those obsd. in unsupplemented CHO cells. The absence of any one of these three components abolishes CMP-Neu5Ac prodn. in vivo. However, when N-acetylmannosamine feeding is omitted, the sugar nucleotide form of deaminated Neu5Ac, **CMP-2-keto-3-deoxy-D-glycero-D-galacto-nononic acid (CMP-KDN)**, is produced instead, indicating that alternative sialic acid glycoforms may eventually be possible in **insect cells**. The human CMP-SAS enzyme is also capable of CMP-N-glycolylneuraminic acid (CMP-Neu5Gc) synthesis when provided with the proper substrate. Engineering the CMP-SA metabolic pathway may be beneficial in various cell lines in which CMP-Neu5Ac prodn. limits sialylation of glycoproteins or other glycans.
REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

ACCESSION NUMBER: 2000:323924 BIOSIS
DOCUMENT NUMBER: PREV200100323924
TITLE: Determination of nucleotides and sugar nucleotides
involved in protein glycosylation by high-performance
anion-exchange chromatography: Sugar nucleotide contents in cultured
insect cells and mammalian cells.
AUTHOR(S): Tomiya, Noboru; Ailor, Eric; Lawrence, Shawn M.;
Betenbaugh, Michael J.; Lee, Yuan C. (1)
CORPORATE SOURCE: (1) Department of Biology, Johns Hopkins University,
Baltimore, MD, 21218: yclee@jhu.edu USA
SOURCE: Analytical Biochemistry, (June 1, 2001) Vol. 293, No. 1,
pp. 129-137. print.
ISSN: 0003-2697.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English

AB We have developed a simple and highly sensitive HPLC method for
determination of cellular levels of sugar nucleotides and related
nucleotides in cultured cells. Separation of 9 sugar nucleotides
(CMP-Neu5Ac, CMP-Neu5Gc, **CMP-KDN**, UDP-Gal, UDP-Glc,
UDP-GalNAc, UDP-GlcNAc, GDP-Fuc, GDP-Man) and 12 nucleotides (AMP, ADP,
ATP, CMP, CDP, CTP, GMP, GDP, GTP, UMP, UDP, and UTP) was examined by
reversed-phase HPLC and high-performance anion-exchange chromatography
(HPAEC). Although the reversed-phase HPLC, using an ion-pairing reagent,
gave a good separation of the 12 nucleotides, it did not separate
sufficiently the sugar nucleotides for quantification. On the other hand,
the HPAEC method gave an excellent and reproducible separation of all
nucleotides and sugar nucleotides with high sensitivity and
reproducibility. We applied the HPAEC method to determine the
intracellular sugar nucleotide levels of cultured **Spodoptera**
frugiperda (Sf9) and **Trichoplusia ni** (High Five, BTN-TN-5B1-4)
insect cells, and compared them with those in Chinese
hamster ovary (CHO-K1) cells. Sf9 and High Five cells showed
concentrations of UDP-GlcNAc, UDP-Gal, UDP-Glc, GDP-Fuc, and GDP-Man
equal to or higher than those in CHO cells. CMP-Neu5Ac was detected in CHO
cells, but it was not detected in Sf9 and High Five cells. In conclusion,
the newly developed HPAEC method could provide valuable information
necessary for generating sialylated complex-type N-glycans in insect or
other cells, either native or genetically manipulated.

ACCESSION NUMBER: 1993:408634 BIOSIS
DOCUMENT NUMBER: PREV199396074359
TITLE: Biosynthesis and secretion of human interleukin 2
glycoprotein variants from baculovirus-infected Sf21
cells:
Characterization of polypeptides and posttranslational
modifications.
AUTHOR(S): Grabenhorst, Eckart; Hofer, Bernd; Nimtz, Manfred; Jaeger,
Volker; Conradt, Harald S. (1)
CORPORATE SOURCE: (1) Dep. Cell Biology Genetics, Gesellschaft
Biotechnologische Forschung, Mascheroder Weg 1, W-3300
Braunschweig Germany
SOURCE: European Journal of Biochemistry, (1993) Vol. 215, No. 1,
pp. 189-197.
ISSN: 0014-2956.
DOCUMENT TYPE: Article
LANGUAGE: English

AB Human interleukin 2 (IL-2) and human IL-2 mutant proteins, with
artificially introduced N-glycosylation or O-glycosylation sites, have

been expressed in a lepidopteran cell line (Sf21, *Spodoptera frugiperda*) using recombinant baculovirus vectors. Only approximately 25% of the total recombinant IL-2 protein synthesized by Sf21 cells was secreted into the culture medium. Significant N-terminal truncations were detected in the secreted polypeptides (up to 85% of the molecules). Alanine and proline were absent in the major truncated forms; the first 3-5 amino acids were also absent in a small proportion of the purified proteins. The introduction of potential artificial O-glycosylation peptide sequences (..GGKAPTPPPK..), to the C-terminus or between positions 80 and 81 of the IL-2 polypeptide chain, resulted in the secretion of unglycosylated and O-glycosylated variant forms. Fast atom bombardment mass spectrometry, compositional analysis and methylation analysis, of the tryptic glycopeptide APTPPPK, revealed the presence of either GalNAc or the disaccharide Gal(beta-1-3)GalNAc as the only carbohydrate constituents attached exclusively to Thr in this peptide, in a specific ratio for each individual IL-2 mutant protein. The Gal(beta-1-3)GalNAc protein forms could be partially altered in vitro to mammalian-type glycoforms by porcine liver beta-galactoside alpha-2,3-sialyltransferase in the presence of **CMP-N-acetylneuraminic acid**. An IL-2 mutant form, with an 11-amino-acid peptide of human interferon-beta at position 4, which includes its only N-glycosylation site, had exclusively truncated proximally fucosylated oligomannosidic glycans; Man-3GlcNAc(Fuc(alpha-1-6))GlcNAc or Man-2GlcNAc(Fuc(alpha-1-6))GlcNAc structures, in a ratio of 3:1, were detected in the secreted proteins. No evidence was obtained for the presence of secreted proteins with complex oligosaccharide chains, irrespective of the cell-culture conditions used or the harvesting time, for infected cells with recombinant baculovirus constructs.